Australian Government
Australian Centre for
International Agricultural Research

Sustainable Management of Soil in Oil Palm Plantings

ACIAR PROCEEDINGS 144

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Role of microbial communities in fertility of soil of perennial tropical plantations: potentialities for oil palm plantations

Didier Lesueur[1], Laetitia Herrmann[2], Agnés Robin[3], Wanpen Wiriyakitnateekul[4], Lambert Bräu[2]

Abstract

The perennial plantations of rubber trees (*Hevea brasilensis* Muell. Arg.), oil palm trees (*Elaeis guineensis*) and coffee trees (*Coffea* L.) are economically important in South-East Asia. Despite some initiatives promoting organic farming, mineral fertilisers are predominately used for growing these crops, with huge economic and environmental consequences. It is well known that for many agricultural and horticultural systems, a healthy soil microbial community leads to healthier plants and increased yields. That can be explained by the extensive interactions between plant roots and soil micro-organisms that further affect plant nutrition either directly by influencing mineral nutrient availability, or indirectly through root-growth promotion enhancing uptake efficiency. The increased understanding of the roles of root- or rhizosphere-associated microbes in plant nutrition and/or crop yields has resulted in their promotion for use in agricultural production as alternatives or supplements to mineral and/or organic fertilisers. However, little information is available concerning perennial plantations. Moreover, there is an obvious lack of promotion of beneficial soil micro-organisms to farmers, associated with a lack of market penetration of microbial inoculants for limiting the use of mineral fertilisers. Our presentation describes how the soil micro-organisms could efficiently be used for improving and sustaining the production of perennial plantations in South-East Asia. Several examples will be given to illustrate the way forward and an example of oil palm plantations will be emphasised.

1 CIRAD, UMR Eco&Sols, Land Development Department, 10900 Bangkok, Thailand. Email: didier.lesueur@cirad.fr

2 School of Life and Environmental Sciences, Faculty of Science and Technology, Deakin University, Victoria 3125, Australia. Email: lherrman@deakin.edu.au

3 CIRAD, UMR Eco&Sols, F-34060 Montpellier, France. Email: agnes.robin@cirad.fr

4 Land Development Department, Office of Science for Land Development, 10900 Bangkok, Thailand. Email: wpenldd@gmail.com